



GUARDIAN EVAPORATORS



KIRBY GUARDIAN™ Evaporators

The first line of defence
just got stronger



Exclusively distributed by

KIRBY
A BEIJER REF Company

KIRBY GUARDIAN™

Evaporators

The Next-Generation of Technology to Solve Modern Refrigeration Challenges

Are you ready to meet the future challenges of refrigeration? Like never before, increasing energy costs, avoiding food loss and wastage, changes in refrigerant technology and additional requirements for cool room efficiency are making the need for sustainable solutions an urgent priority for all.

The solution to all these requirements is developing advanced engineering techniques that deliver intelligent, flexible and more effective solutions. That's why Kirby has been continually dedicated to raising industry standards for sophisticated refrigeration solutions that substantially boost efficiency, reducing impact on the environment and the total cost of ownership. It's a complex challenge that only the most innovative designs can solve.

At the end of the day, our commitment is to deliver peace of mind; and we remain as determined as ever to raise installers, specifiers and asset owners' expectations for smarter, more reliable and more efficient systems now and into the future.

Evaporators often act as the first line of defence for a refrigeration system, and with Kirby Guardian™, the first line of defence just got stronger.

Kirby Guardian™ Evaporators – Nomenclature

K	MS	H	A	3	047	-XX
			Fan Size			
			A 300mm (AC)			
			B 350mm (AC)			
			C 300mm (EC)			
			D 350mm (EC)			
			Fluid Type			
			H HFC			
			C CO ₂			
			Usage Application			
			LU Low Temperature – Low Frost			
			LS Low Temperature – Standard			
			MU Medium Temperature – Low Frost			
			MS Medium Temperature – Standard			
			Number of Fans			
			1 1 Fan			
			2 2 Fans			
			3 3 Fans			
			4 4 Fans			
			5 5 Fans			
			Manufacturer Brand			
			K Kirby			

GUARDIAN EVAPORATORS

Features and Benefits

Advanced Coil Design for Greater Efficiency



ADVANCED COIL DESIGN FOR GREATER EFFICIENCY

The secret of the Kirby Guardian™ performance lies in our Series9 coil, which thanks to its innovative design and use of sine wave technology produces a larger heat exchange surface area.

Series9 significantly improves the efficiency of the unit, reducing overall energy consumption and lowering greenhouse emissions, as well as making a valuable contribution to the bottom line through a lower cost of ownership.

Here Today, Ready for Tomorrow

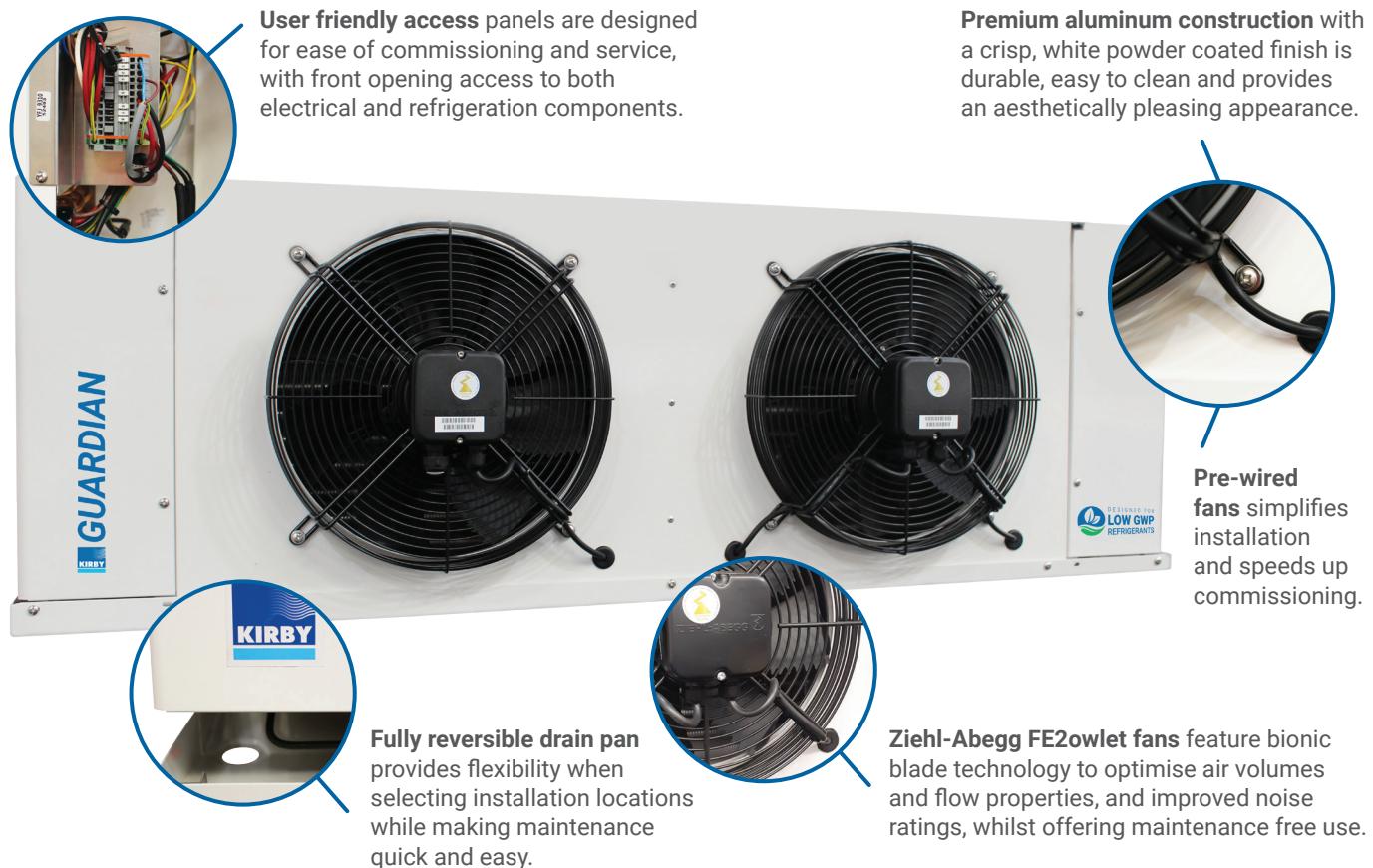


All models within the Kirby Guardian™ range are specifically designed for next-generation, low Global Warming Potential (GWP) refrigerants, including R448A, R449A, R450A and R507A.

Not only does this provide tremendous flexibility for installation and system performance options, but your investment is future proofed for years to come through the global HFC phase-down.

Innovative Features, Real Benefits

All models within the Kirby Guardian™ family combine innovative features to deliver substantial benefits.



GUARDIAN EVAPORATORS

Rating and Performance Data

Selection of Heat Exchange Equipment on High Glide Refrigerants

As the refrigeration industry moves towards high glide alternatives to the commonly used refrigerants R134a, R404A and R507A, it is becoming increasingly common to rate capacities for suitable heat exchange equipment and condensing units.

Currently, it is possible to rate heat exchange equipment via two methods, dew point and mid point. These methods offer significantly different results depending on the application and glide of the refrigerant to be used.

Kirby recommends using the **dew point factor for condensing unit selections**, and the **mid point factor for heat exchange equipment selections**. This position has been taken to ensure the correct humidity control in coolrooms and condensing units are adequately sized for the use of high glide refrigerants.

Correction factors, listed in Tables 1 and 2 below, are based on European Standards EN327 and EN328.

Table 1: Refrigerant correction factors (Dew Point Factor)

Product Type Condition	Dx Air Coolers				Air Cooled Condensers	Glide @40°C (Information only)
	SC 1	SC 2	SC 3	SC 4	DTI=15 K or DTI = 10 K	
R404A (reference)	1	1	1	1	1	0.5
R134a	0.93	0.91	0.85	-	0.96	0
R507A [REFPROP 9.1]	0.97	0.97	0.97	0.97	1	0
R407A	1.19	1.24	1.28	1.32	0.89	4.5
R407C	1.21	1.26	1.31	1.36	0.87	5.06
R407F	1.19	1.24	1.29	1.35	0.89	4.52
R448A	1.23	1.26	1.28	1.31	0.89	4.82
R449A	1.21	1.23	1.24	1.26	0.89	4.65
R450A	0.92	0.91	0.84	-	0.93	0.63
R452A	1.1	1.12	1.13	1.15	0.93	3.43
R513A	0.91	0.91	0.85	-	0.95	0.17

Table 2: Refrigerant Correction Factors (Mid Points Factor)

Product Type Condition	Dx Air Coolers				Air Cooled Condensers	Glide @40°C (Information only)
	SC 1	SC 2	SC 3	SC 4	DTI=15 K or DTI = 10 K	
R404A (reference in dew point)	1	1	1	1	1	0.5
R448A	0.97	0.96	0.95	0.94	1.08	4.82
R449A	0.96	0.95	0.94	0.93	1.07	4.65
R452A	0.96	0.94	0.94	0.93	1.04	3.43
R450A	0.93	0.89	0.83	0.79	0.92	0.63
R513A	0.92	0.9	0.86	0.83	0.93	0

Performance Rating Basis & Selection Notes

1. Capacity (Australian Conditions)

Australian Conditions are based on industry guidelines at 40°C entering liquid (inherent subcooling).

Application	Temperature	Air On	KTD
Medium Temperature	20°C	85%	6
Low Temperature	-18°C	90%	6

2. Capacity (European Conditions)

European Conditions are based on European Standards EN327 and EN328.

Application	Temperature	Air On	KTD
Medium Temperature	0°C	85%	8
Low Temperature	-18°C	90%	7

3. Air Flow

Rated at standard air conditions (20°C dry air, 101.35kPa atmospheric pressure).

4. Airthrow

Based on industry guidelines. Measurements taken at 0.50l/m and 0.75l/m from the ceiling at 20°C air. The distance at which the average of the three values equals 0.5m/s is taken as the limit of airthrow. Correction for +2°C room (0.94) is included.

5. Sound Power

Tests were undertaken with a sound intensity meter generally in accordance with the methods of ISO9614-1:1993 (measured at discrete points).

6. Refrigerant Charge

Calculated at 80% liquid and 20% vapor including header at -4°C SST and 6KTD

7. Defrost Heaters

Medium Temperature: Optional defrost kit includes mandatory 2 wire Heater Safety Switch – Refer to Installation Manual.

Low Temperature: Defrost system includes mandatory 2 wire Heater Safety Switch and 3 wire Defrost Initiation/Termination /Fan Delay Temperature switch supplied as standard – Refer to Installation Manual.

GUARDIAN EVAPORATORS

Medium Temperature Performance Data

PRODUCT NUMBER	CAPACITY WATTS @ -4°C SST. & 6KTD, 85% RH (AUST. WET COIL RATING)		CAPACITY WATTS @ -8°C SST. & 8KTD, 85% RH (EN 328 SC2 WET COIL RATING)		FAN MOTOR DATA						DEFROST HEATER DATA					
					240V / 50HZ / 1 PHASE						FACTORY FITTED – OPTIONAL					
	R134a	R448A	R134a	R448A	No. OF FANS	AIR MOVEMENT		MOTORS TOTAL		SOUND POWER dB(A)	FACTORY FITTED MODEL NUMBER	Volts	Total Watts	Total Amps/Phase	Phase	
300mm FAN DIAMETER																
KMSHA1015	1423	1501	1665	1757	1	364	7.1	85	0.42	68	KMSHA1015-E	240	1000	4.2	Single Phase	
KMSHA1017	1589	1676	1859	1962	1	322	6.4	85	0.42	69	KMSHA1017-E	240	1000	4.2	Single Phase	
KMSHA2026	2473	2608	2894	3053	2	778	10.6	170	0.84	71	KMSHA2026-E	240	2000	8.3	Single Phase	
KMSHA2034	3227	3404	3777	3984	2	683	9.6	170	0.84	71	KMSHA2034-E	240	2000	8.3	Single Phase	
KMSHA3047	4423	4667	5178	5462	3	1092	12.5	255	1.26	72	KMSHA3047-E	415	3000	4.4	Three Phase (Star)	
KMSHA4062	5924	6249	6934	7315	4	1456	14.0	340	1.68	74	KMSHA4062-E	415	4000	5.8	Three Phase (Star)	
KMSHA4069	6559	6919	7677	8099	4	1289	12.7	340	1.68	75	KMSHA4069-E	415	4000	5.8	Three Phase (Star)	
350mm FAN DIAMETER																
KMSHB1025	2383	2514	2789	2942	1	672	8.7	215	1.05	72	KMSHB1025-E	240	1750	7.3	Single Phase	
KMSHB2047	4427	4671	5182	5467	2	1450	13.0	430	2.10	77	KMSHB2047-E	415	3500	7.0	Three Phase (Star)	
KMSHB2060	5683	5996	6652	7018	2	1261	11.9	430	2.10	77	KMSHB2060-E	415	3500	7.0	Three Phase (Star)	
KMSHB2065	6186	6526	7241	7638	2	1189	11.2	430	2.10	77	KMSHB2065-E	415	3500	7.0	Three Phase (Star)	
KMSHB3091	8664	9140	10141	10699	3	1892	14.5	645	3.15	79	KMSHB3091-E	415	5250	10.6	Three Phase (Star)	
KMSHB3098	9314	9826	10902	11501	3	1783	13.8	645	3.15	79	KMSHB3098-E	415	5250	10.6	Three Phase (Star)	
KMSHB4124	11775	12422	13782	14540	4	2522	16.3	860	4.20	81	KMSHB4124-E	415	7000	14.2	Three Phase (Star)	
KMSHB5162	15379	16224	18001	18990	5	2972	17.5	1075	5.25	82	KMSHB5162-E	415	8750	17.7	Three Phase (Star)	

GUARDIAN EVAPORATORS

Low Temperature Performance Data

PRODUCT NUMBER	CAPACITY WATTS @ -24°C SST. & 6KTD, 90% RH (AUST. WET COIL RATING)		CAPACITY WATTS @ -25°C SST. & 7KTD, 95% RH (EN328 SC3 WET COIL RATING)		FAN MOTOR DATA						DEFROST HEATER DATA					
					240V / 50HZ / 1 PHASE						FACTORY FITTED					
	R448A	R404A	R448A	R404A	NUMBER OF FANS	AIR MOVEMENT		MOTORS TOTAL		SOUND POWER dB(A)	Volts	Total Watts	Total Amps/Phase	Phase		
300mm FAN DIAMETER																
KLSHA1013	1339	1410	1492	1570	1	342	6.3	85	0.42	68	240	1000	4.2	Single Phase		
KLSHA2023	2346	2470	2613	2751	2	728	9.4	170	0.84	71	240	2000	8.3	Single Phase		
KLSHA2028	2755	2900	3068	3230	2	644	8.5	170	0.84	72	240	2000	8.3	Single Phase		
KLSHA3035	3541	3727	3943	4151	3	1092	11.5	255	1.26	72	415	3000	4.4	Three Phase (Star)		
KLSHA3039	3924	4131	4370	4600	3	1025	10.9	255	1.26	72	415	3000	4.4	Three Phase (Star)		
KLSHA4055	5451	5738	6070	6390	4	1289	11.7	340	1.68	75	415	4000	5.8	Three Phase (Star)		
350mm FAN DIAMETER																
KLSHB1021	2057	2165	2291	2411	1	631	7.6	215	1.05	73	240	1750	7.3	Single Phase		
KLSHB2042	4201	4422	4679	4925	2	1344	11.4	430	2.10	77	415	3500	7.0	Three Phase (Star)		
KLSHB2050	4974	5236	5539	5831	2	1189	10.4	430	2.10	77	415	3500	7.0	Three Phase (Star)		
KLSHB3067	6666	7017	7424	7814	3	1892	13.5	645	3.15	79	415	5250	10.6	Three Phase (Star)		
KLSHB3075	7517	7912	8371	8811	3	1783	12.8	645	3.15	79	415	5250	10.6	Three Phase (Star)		
KLSHB4099	9887	10407	11010	11590	4	2378	14.3	860	4.20	81	415	7000	14.2	Three Phase (Star)		
KLSHB5119	11909	12536	13263	13961	5	2972	16.0	1075	5.25	82	415	8750	17.7	Three Phase (Star)		

GUARDIAN ULTRA EVAPORATORS

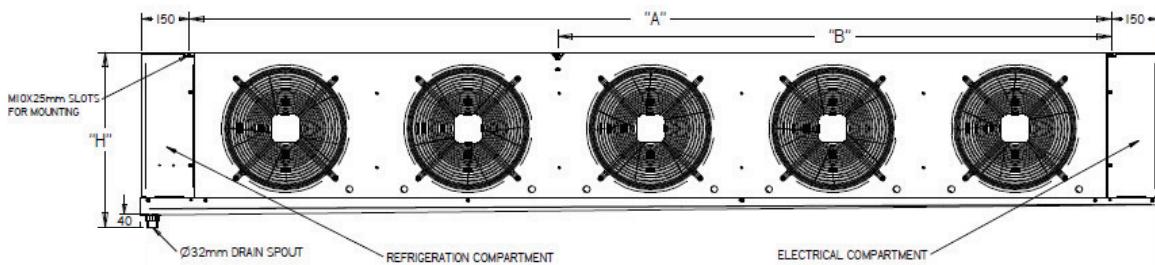
Medium Temperature Performance Data

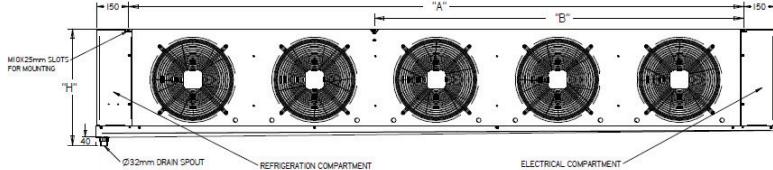
PRODUCT NUMBER	CAPACITY WATTS @ -4°C SST. & 6KTD, 85% RH (AUST. WET COIL RATING)		CAPACITY WATTS @ -8°C SST. & 8KTD, 85% RH (EN 328 SC2 WET COIL RATING)		FAN MOTOR DATA						DEFROST HEATER DATA					
					240V / 50HZ / 1 PHASE						FACTORY FITTED – OPTIONAL					
	R134a	R448A	R134a	R448A	No. OF FANS	AIR MOVEMENT		MOTORS TOTAL		SOUND POWER dB(A)	FACTORY FITTED, MODEL NUMBER	VOLTS	TOTAL WATTS	TOTAL AMPS/ PHASE	PHASE	
300mm FAN DIAMETER																
KMUHA2031	2904	3063	3399	3586	2	740	9.6	170	0.84	71	KMUHA2031-E	240	2000	8.3	Single Phase	
KMUHA3048	4566	4817	5345	5638	3	1050	11.3	255	1.26	72	KMUHA3048-E	415	3000	4.4	Three Phase (Star)	
KMUHA4062	5903	6227	6909	7289	4	1400	12.6	340	1.68	74	KMUHA4062-E	415	4000	5.8	Three Phase (Star)	
350mm FAN DIAMETER																
KMUHB1023	2171	2291	2541	2681	1	675	8.6	215	1.05	73	KMUHB1023-E	240	1750	7.3	Single Phase	
KMUHB2059	5569	5875	6518	6876	2	1278	11.7	430	2.10	77	KMUHB2059-E	415	3500	7.0	Three Phase (Star)	
KMUHB3082	7798	8226	9127	9629	3	2025	15.2	645	3.15	79	KMUHB3082-E	415	5250	10.6	Three Phase (Star)	
KMUHB3088	8382	8843	9811	10350	3	1917	14.0	645	3.15	79	KMUHB3088-E	415	5250	10.6	Three Phase (Star)	
KMUHB4119	11239	11856	13155	13877	4	2556	16.1	860	4.20	81	KMUHB4119-E	415	7000	14.2	Three Phase (Star)	
KMUHB5146	13843	14603	16203	17093	5	3194	17.9	1075	5.25	82	KMUHB5146-E	415	8750	17.7	Three Phase (Star)	

GUARDIAN ULTRA EVAPORATORS

Low Temperature Performance Data

PRODUCT NUMBER	CAPACITY WATTS @ -24°C SST. & 6KTD, 90% RH (AUST. WET COIL RATING)		CAPACITY WATTS @ -25°C SST. & 7KTD, 95% RH (EN328 SC3 WET COIL RATING)		FAN MOTOR DATA						DEFROST HEATER DATA					
					240V / 50HZ / 1 PHASE						FACTORY FITTED					
	R448A	R404A	R448A	R404A	NUMBER OF FANS	AIR MOVEMENT		MOTORS TOTAL		SOUND POWER dB(A)	VOLTS	TOTAL WATTS	TOTAL AMPS/ PHASE	PHASE		
300mm FAN DIAMETER																
KLUHA2023	2311	2433	2574	2709	2	740	8.9	170	0.84	71	240	2000	8.3	Single Phase		
KLUHA3038	3753	3951	4180	4400	3	1050	10.4	255	1.26	72	415	3000	4.4	Three Phase (Star)		
KLUHA4050	5026	5291	5597	5892	4	1400	11.7	340	1.68	74	415	4000	5.8	Three Phase (Star)		
350mm FAN DIAMETER																
KLUHB1019	1852	1950	2063	2171	1	675	8.0	215	1.05	73	240	1750	7.3	Single Phase		
KLUHB2045	4529	4768	5044	5309	2	1278	10.8	430	2.10	77	415	3500	7.0	Three Phase (Star)		
KLUHB3060	6000	6315	6681	7033	3	2025	14.1	645	3.15	79	415	5250	10.6	Three Phase (Star)		
KLUHB3066	6605	6952	7355	7742	3	1917	13.1	645	3.15	79	415	5250	10.6	Three Phase (Star)		
KLUHB4087	8747	9207	9741	10254	4	2556	14.9	860	4.20	81	415	7000	14.2	Three Phase (Star)		
KLUHB5108	10800	11368	12027	12660	5	3194	16.3	1075	5.25	82	415	8750	17.7	Three Phase (Star)		





GUARDIAN EVAPORATORS

Physical Data

PRODUCT NUMBER	FIELD SERVICES CONNECTIONS (mm)				OPERATING REFRIGERANT CHARGE (kg)			DIMENSIONS (mm)					DRY WEIGHT (kg)		
	SUCTION	LIQUID	EXT. EQUALISER STUB	CONDENSATE DRAIN	R134a	R448A	R404A	L LENGTH	D DEPTH	H HEIGHT	A	B	C	UNPACKED	PACKED
KIRBY GUARDIAN™ – MEDIUM TEMPERATURE (300mm FAN DIAMETER)															
KMSHA1015	9.52	9.52	9.52	32	1.26	1.13	1.12	750	470	494	440	-	375	13	16
KMSHA1017	12.70	12.70	9.52	32	1.89	1.70	1.69	750	470	494	440	-	375	15	18
KMSHA2026	12.70	12.70	9.52	32	1.89	1.70	1.69	1155	470	494	845	-	375	21	26
KMSHA2034	15.88	12.70	9.52	32	3.25	2.92	2.91	1155	470	494	845	-	375	24	29
KMSHA3047	19.05	12.70	9.52	32	3.88	3.49	3.47	1560	470	494	1250	-	375	31	47
KMSHA4062	22.22	12.70	9.52	32	5.14	4.62	4.59	1970	470	494	1660	-	375	40	60
KMSHA4069	22.22	12.70	9.52	32	7.76	6.97	7.76	1970	470	494	1660	-	375	47	56
KIRBY GUARDIAN™ – MEDIUM TEMPERATURE (350mm FAN DIAMETER)															
KMSHB1025	12.70	12.70	9.52	32	1.89	1.70	1.69	850	470	545	540	-	420	18	22
KMSHB2047	19.05	12.70	9.52	32	3.15	2.83	2.81	1485	470	545	1175	-	420	29	37
KMSHB2060	22.22	12.70	9.52	32	5.24	4.71	4.69	1485	470	545	1175	-	420	35	43
KMSHB2065	22.22	12.70	9.52	32	6.40	5.75	5.72	1485	470	545	1175	-	420	38	46
KMSHB3091	25.40	12.70	9.52	32	7.97	7.16	7.12	2060	470	545	1745	-	420	49	74
KMSHB3098	25.40	12.70	9.52	32	9.55	8.58	8.53	2060	470	545	1745	-	420	54	81
KMSHB4124	25.40	15.88	9.52	32	10.59	9.52	9.47	2630	470	545	2320	1165	420	65	98
KMSHB5162	31.75	15.88	9.52	32	15.84	14.23	14.15	3200	470	545	2890	1735	420	86	128
KIRBY GUARDIAN™ ULTRA – MEDIUM TEMPERATURE (300mm FAN DIAMETER)															
KMUHA2031	15.88	12.70	9.52	32	3.25	2.92	2.91	1155	470	494	845	-	375	23	35
KMUHA3048	19.05	12.70	9.52	32	5.77	5.18	5.16	1560	470	494	1250	-	375	37	53
KMUHA4062	22.22	12.70	9.52	32	7.76	6.97	6.94	1970	470	494	1660	-	375	46	56
KIRBY GUARDIAN™ ULTRA – MEDIUM TEMPERATURE (350mm FAN DIAMETER)															
KMUHB1023	12.70	12.70	9.52	32	2.31	2.07	2.06	850	470	545	540	-	420	18	22
KMUHB2059	22.22	12.70	9.52	32	6.4	5.75	5.72	1485	470	545	1175	-	420	37	57
KMUHB3082	25.40	12.70	9.52	32	7.97	7.16	7.12	2060	470	545	1745	-	420	48	73
KMUHB3088	25.40	12.70	9.52	32	9.55	8.58	8.53	2060	470	545	1745	-	420	53	78
KMUHB4119	28.60	15.88	9.52	32	12.69	11.34	11.3C	2630	470	545	2320	1165	420	70	100
KMUHB5146	31.75	15.88	9.52	32	15.84	14.23	14.15	3200	470	545	2890	1735	420	85	120
KIRBY GUARDIAN™ – LOW TEMPERATURE (300mm FAN DIAMETER)															
KLSHA1013	15.88	12.70	9.52	32	-	1.70	1.69	750	470	494	440	-	375	16	19
KLSHA2023	19.05	12.70	9.52	32	-	2.36	2.34	1155	470	494	845	-	375	23	28
KLSHA2028	22.22	12.70	9.52	32	-	3.49	3.47	1155	470	494	845	-	375	27	32
KLSHA3035	22.22	12.70	9.52	32	-	3.49	3.47	1560	470	494	1250	-	375	32	48
KLSHA3039	25.40	12.70	9.52	32	-	4.34	4.31	1560	470	494	1250	-	375	34	50
KLSHA4055	25.40	12.70	9.52	32	-	4.34	6.94	1970	470	494	1660	-	375	47	67
KIRBY GUARDIAN™ – LOW TEMPERATURE (350mm FAN DIAMETER)															
KLSHB1021	19.05	9.52	9.52	32	-	2.07	2.06	850	470	545	540	-	420	19	23
KLSHB2042	25.40	9.52	9.52	32	-	3.77	3.75	1485	470	545	1175	-	420	32	40
KLSHB2050	25.40	9.52	9.52	32	-	5.75	5.72	1485	470	545	1175	-	420	39	48
KLSHB3067	28.58	9.52	9.52	32	-	7.16	7.12	2030	470	545	1745	-	420	50	75
KLSHB3075	31.75	12.70	9.52	32	-	8.58	8.53	2060	470	545	1745	-	420	55	83
KLSHB4099	41.28	12.70	9.52	32	-	11.4	11.34	2630	470	545	2320	1165	420	72	108
KLSHB5119	41.28	12.70	9.52	32	-	14.23	14.15	3200	470	545	2890	1735	420	87	129
KIRBY GUARDIAN™ ULTRA – LOW TEMPERATURE (300mm FAN DIAMETER)															
KLUHA2023	22.22	12.70	9.52	32	-	3.09	3.07	1155	470	494	845	-	375	24	29
KLUHA3038	25.40	12.70	9.52	32	-	5.48	5.44	1560	470	494	1250	-	375	38	54
KLUHA4050	25.40	12.70	9.52	32	-	7.38	7.33	1970	470	494	1660	-	375	47	57
KIRBY GUARDIAN™ ULTRA – LOW TEMPERATURE (350mm FAN DIAMETER)															
KLUHB1019	19.05	9.52	9.52	32	-	2.19	2.18	850	470	545	540	-	420	18	22
KLUHB2045	25.40	9.52	9.52	32	-	6.08	6.04	1485	470	545	1175	-	420	38	58
KLUHB3060	28.60	9.52	9.52	32	-	7.58	7.52	2060	470	545	1745	-	420	49	74
KLUHB3066	31.75	12.70	9.52	32	-	9.08	9.01	2060	470	545	1745	-	420	54	79
KLUHB4087	41.28	12.70	9.52	32	-	12.07	11.98	2630	470	545	2320	1165	420	71	101
KLUHB5108	41.28	12.70	9.52	32	-	15.06	14.95	3200	470	545	2890	1735	420	86	121



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